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|---|-------------|----------------------|---------------------|------------------|
| APPLICATION NO.                           | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 10/561,456                                | 02/08/2007  | Babak Movassaghi     | DE 030224           | 6431             |
| 24737                                     | 7590        | 06/02/2009           | EXAMINER            |                  |
| PHILIPS INTELLECTUAL PROPERTY & STANDARDS |             |                      | CORBETT, JOHN M     |                  |
| P.O. BOX 3001                             |             |                      | ART UNIT            | PAPER NUMBER     |
| BRIARCLIFF MANOR, NY 10510                |             |                      | 2882                |                  |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

|                              |                                      |  |
|------------------------------|--------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/561,456 | <b>Applicant(s)</b><br>MOVASSAGHI ET AL. |
|                              | <b>Examiner</b><br>JOHN M. CORBETT   | <b>Art Unit</b><br>2882                  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 08 February 2007.  
 2a) This action is FINAL.      2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-10 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-10 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 08 February 2007 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-146/08)  
 Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date \_\_\_\_\_  
 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Specification***

1. The specification is objected to because it refers to claims 1, 6 and 8 on pages 1 and 5, which may create discrepancies and new matter issues if future claim amendments were to be made. Therefore, the examiner suggests removing all references to the claims that are in the specification.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 4 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claims 4 and 5, the phrase “in particular” renders the claim indefinite because it is unclear whether the limitations following the phrase are or are not part of the claimed invention.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3 and 5-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Rasche et al. ("ECG-gated 3D-rotational coronary angiography (3DRCA)", 2002, Proceedings of the 16<sup>th</sup> International Congress and Exposition on Computer Assisted Radiology and Surgery (CARS 2002), Pages 827-831).

With respect to claim 1, Rasche et al. discloses a device (Figure 1) for generating a three-dimensional image of an object (Abstract) which is subject to a cyclic movement, comprising an imaging device (Figure 1) to generate projection pictures (projections acquired via protocols in Table 1) of the object from various projection directions and a data processing device (Figure 1, system necessarily has computer) coupled to this for reconstruction of a three-dimensional image of the object from said projection pictures (Abstract), the data processing device is designed to use for reconstruction of the three-dimensional image only those projection pictures (Abstract, gated window) for which the projection lines of a characteristic object feature (coronary arteries reconstructed) necessarily intersect approximately in the same spatial point ( $r_0$ ) (Abstract, lines 14-16, at least during diastole phase a clear visualization of the coronary artery tree was reconstructed so projection lines of a characteristic object feature necessarily intersect approximately in the same spatial point ( $r_0$ )).

With respect to claim 2, Rasche et al. further discloses the imaging device is an X-ray device with an X-ray source and an X-ray detector which are mounted rotatable about a common axis (Figure 1).

With respect to claim 3, Rasche et al. further discloses a display device coupled with the data processing device to display the reconstructed three-dimensional image (Figure 1).

With respect to claim 5, Rasche et al. further discloses the characteristic object feature is a branch point ( $r_0$ ) of an object structure (Figure 5) in particular a vessel.

With respect to claim 6, Rasche et al. further discloses where the data processing device is designed

- a) to necessarily select from a number of a projection pictures a first projection picture (first projection is necessarily selected in relation to a given phase determined by ECG. By selecting the diastolic phase for all projections results in clear reconstructed);
- b) for said first projection picture to select a second projection picture taken from another projection direction (Multiple projections of same phase obtained from different directions as outlined in protocols in Table I) such that the projection lines of a characteristic object feature for both projection pictures necessarily intersect at least approximately at a spatial point ( $r_0$ ) (Abstract, lines 14-16, same phase selected for second projection as found for first projection image. Since subsequent reconstruction of diastolic phase of characteristic feature results in clear

image of the characteristic feature, then the characteristic object feature for all projection pictures selected necessarily intersect at least approximately at a spatial point ( $r_0$ ));

c) to select further projection pictures for the reconstruction of the three-dimensional image such that the associated projection lines of the characteristic object feature run approximately through said spatial point ( $r_0$ ) (Abstract, lines 14-16, same phase selected for subsequent projections as found for first and second projection images. Since subsequent reconstruction of diastolic phase of characteristic feature results in clear image of the characteristic feature, then the characteristic object feature for all projection pictures selected necessarily intersect at least approximately at a spatial point ( $r_0$ )).

With respect to claim 7, Rasche et al. further necessarily discloses the projection direction of the second projection picture lies approximately at an angle ( $\alpha$ ) of  $90^\circ$  to the projection direction of the first projection picture (Abstract, lines 5-6 and protocols in Table I. Based on heart beats and acquisition rates, second projections will necessarily be obtained for diastolic phase approximately at an angle ( $\alpha$ ) of  $90^\circ$  to the projection direction of the first projection picture).

With respect to claim 8, Rasche et al. discloses a method for generating a three-dimensional image of an object which is subject to a cyclic movement (Abstract), comprising the steps of:

a) generation of a number of projection pictures of the object from various spatial directions (projections acquired via protocols in Table 1);

b) selection of projection pictures for which the projection lines of a characteristic object feature intersect approximately at the same spatial point ( $r_0$ ) (Abstract, lines 14-16, at least during diastole phase a clear visualization of the coronary artery tree was reconstructed so projection lines of a characteristic object feature necessarily intersect approximately in the same spatial point ( $r_0$ ));

c) reconstruction of the three-dimensional image from the projection pictures selected in step b) (Abstract).

With respect to claim 9, Rasche et al. further discloses the projection pictures are generated by X-ray projection of an object, the projection centers are distributed on a circle arc about the object (Figure 1).

With respect to claim 10, Rasche et al. further discloses the reconstructed three-dimensional image is shown on a display device (Abstract and Figure 1).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rasche et al. as applied to claim 1 above, and further in view of Chen et al. ("Quantitative Analysis of Reconstructed 3-D Coronary Arterial Tree and Intracoronary Devices", July 2002, IEEE Transactions on Medical Imaging, Volume 21, Number 7, Pages 724-739).

With respect to claim 4, Rasche et al. discloses the device as recited above.

Rasche et al. fails to explicitly disclose the characteristic object feature is a marker on the object, in particular a catheter or stent.

Chen et al. teaches the characteristic object feature is a marker on the object (Figure 10), in particular a catheter or stent.

It would have been obvious to one of ordinary skill at the time the invention was made to modify the device of Rasche et al. to include the marker of Chen et al., since a person would have been motivated to make such a modification to improve the outcome of a surgical implantation procedure by providing more information on the position of the implantation device (Page 724, Col. 2, lines 10-18) as implied by Chen et al.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN M. CORBETT whose telephone number is (571)272-8284. The examiner can normally be reached on M-F 8 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. M. C./  
Examiner, Art Unit 2882

/Edward J Glick/  
Supervisory Patent Examiner, Art Unit 2882